

### **REMARKS**

Reconsideration of the application in light of the following remarks is respectfully requested.

#### **Status of the Claim**

Claim 1 is pending in this application. New claim 2 has been newly added. No new matter has been added.

#### **Rejections under 35 U.S.C. § 103**

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,993,597 to Saito et al. (“Saito”) in view of U.S. Patent No. 4,554,141 to Scull et al. (“Scull”). Applicants traverse.

First, the lines the Examiner is referring to in Scull et al. (column 1, lines 13-23), which correspond to the “Description of the Prior Art” section, simply state a technical standard required to manufacture semiconductors with “proper electrical properties” at that time (1985). On the other hand, what is claimed in Claim 1 of their invention, is the addition of boron, and phosphorus and/or arsenic, at the same time, in the specified ratio to the extremely highly purified silicon (11N grade) material, to obtain the highly durable electrode for the plasma etching process. Therefore, the Applicants believe that incorporating “the teaching” of Scull et al. into Saito et al. does not lead to their invention.

Second, neither Saito et al. nor Scull et al. have taught or suggested the specific technical effect, which is only achieved when multiple species of atoms are added to silicon raw materials. In Tables 1-3 of the specification, it has been demonstrated that durability of an



electrode for plasma etching was significantly improved by adding boron, and phosphorus and/or arsenic at the same time, in the specified ratio. Saito et al. specifically claims a plasma etching electrode doped with “boron or phosphorus” (Saito et al. Claim 1 and 3), and in Scull et al., it only “taught” what kinds of contaminants would be acceptable at what extent, and there is no description about the specific technical effect only achieved when multiple species of atoms are added. Further, there is no motivation established from Saito et al. or Scull et al. adding boron, and phosphorus and/or arsenic at the same time, to achieve manufacturing of an electrode with superior durability for plasma etching. For that reasoning, the Applicants believe that Claim 1 is allowable.

Third, in regard to “the prima facie case of obviousness”, the Applicants maintain that the present invention is unobvious since the well-known “compensation effect” teaches away from the superior durability achieved by the present invention.

In the silicon crystal, boron behaves as an “acceptor”, and arsenic and phosphorus as a “donor” of an electron. According to the compensation effect, if an acceptor and a donor were added at the same time, the number of the total electron carriers would be reduced, and consequently the resistance of the electrode plate would increase, leading to poorer durability of the electrode. Nonetheless, superior durability has been achieved in the present invention, for an electrode plate made of a single silicon crystal, by adding dopants with valency number of 3 (boron) and 5 (arsenic and phosphorus) at the same time. Therefore, the present invention would not be obvious over Saito in view of Scull, either together or individually, because the well-known compensation effect teaches away from combining Saito and Scull in order to achieve superior durability. Furthermore, it is an unexpected result that combining an acceptor and a donor as in the present invention would produce superior durability.

For the foregoing reasons, Applicants request reconsideration and withdrawal of the rejection of claim 1 under § 103(a) over Saito in view of Scull.



**New Claim**

New dependent claim 2 has been added. Support for this claim can be found at least at ¶¶ [0028], [0039], and [0050] of the published application.

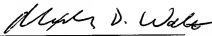
**CONCLUSION**

Each and every point raised in the Office Action mailed November 16, 2009 has been addressed on the basis of the above remarks. In view of the foregoing it is believed that claim 1 is in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

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